NATURAL RESOURCES CONSERVATION SERVICE

CONSTRUCTION SPECIFICATIONS

COMPOSTING FACILITY

1. Scope

The work shall consist of all construction operations and furnishing all materials for complete installation of the composting facility structure or structures.

2. Location

Location of the composting facility, associated buildings, and other appurtenant structures shall be as specified on the construction plans or as staked in the field.

3. Foundation Preparation

The foundation area shall be cleared of all vegetation, stumps, roots, boulders, rubbish, and frozen soil. Topsoil and sod shall be stripped and stockpiled. After stripping, the foundation area shall be prepared to assure proper bond with any required earthfill by removing loose, dry material; scarifying or disking smooth surfaces; and adjusting moisture and compacting as necessary.

4. Structure Excavation

Structure or trench excavation shall be completed to the specified elevations and to sufficient length and width to include allowance for forms, bracing, and supports (as necessary) before any concrete or earthfill is placed within the limits of the excavation. To the extent they are suitable and approved by the inspector, excavated materials are to be used as fill materials. Structure excavation shall also conform to any additional special specifications, which are a part of the construction plans.

5. Structure Earthfill and Grading

Earthfill shall be completed to the lines, grades, and elevations shown on the drawings or as staked in the field and shall also conform to any additional special specifications which are a part of the construction plans. The material placed in the fill shall be free of sod, roots, frozen soil, stones over 6 inches in diameter, and other objectionable material. The placing and spreading of fill material shall be started at the lowest point and brought up in horizontal layers not more than 6 inches thick before compaction. Adequate compaction will be attained by completely traversing each layer with at least one tread track or pass of loaded equipment. Stockpiled topsoil strippings shall be placed on areas where vegetation will be established. Grading shall accomplish a reasonably firm, smooth, and level surface on which to construct the facility.

6. Reinforced Concrete

Concrete shall have a minimum design strength of 3000 psi at 28 days with a maximum net water content of 6.5 gallons/bag.

Portland cement shall be Type I or II. Air entraining admixture shall be used to provide an air content of 5 to 8 percent of the volume of the concrete.

Coarse aggregate shall be hard and free from soil and organic materials and shall consist of gravel, crushed stone, or other suitable materials larger than 3/8 inch. Maximum size shall be 1 inch.

Fine aggregate shall consist of natural or manufactured sand with particle gradation ranging from coarse (3/8 inch) to fine (#200 sieve).

Mixing water shall be clean and free from oil, alkali, or acid.

The proportions of the aggregates shall produce a concrete mixture that will work readily into the corners and angles of the forms and around steel reinforcement when consolidated. The slump at the time of placing shall be 3 to 5 inches.

Concrete and steel reinforcement shall be placed on a firm foundation to the lines and grades shown on the construction drawings. Forms shall be wood, plywood, steel, or other approved materials and shall be mortar-tight. The forms shall be unyielding and shall be constructed so the finished concrete conforms to the specified dimensions and contours.

Prior to placement of concrete, the forms and subgrade shall be free of chips, sawdust, debris, water, ice, snow, extraneous oil, mortar, or other harmful substances or coatings.

Concrete shall be conveyed from the mixer to the forms as rapidly as practical by methods that will prevent segregation of the aggregates and loss of mortar. Concrete shall not be dropped more than 5 feet vertically except where suitable equipment is used to prevent segregation.

Immediately after the concrete is placed in the forms, it shall be consolidated by spading, hand tamping, or vibration as necessary to insure smooth surfaces and dense concrete.

Forms shall be removed in such a way as to prevent damage to the concrete.

All exposed surfaces of the concrete shall be accurately screeded to grade and then floated.

Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period or until curing compound is applied.

Concrete shall not be mixed nor placed when the atmospheric temperature is less than 40^{o} F (4.4^{o} C) or more than 90^{o} F (32.2^{o} C) unless facilities are provided to prevent freezing or for cooling as required.

The owner and/or contractor is encouraged to verify the concrete strength by testing. Testing methods and procedures described in ASTM standards shall be followed.

7. Building

A set of plans, sealed by a licensed professional engineer, shall be provided by the building designer or fabricator. The building shall be designed to meet the latest Uniform Building Code (UBC) and any local codes which may be more restrictive. As a minimum, the building shall be designed for C exposure, a snow load of 20 pounds per square foot, and a wind load from a wind speed of 80 miles per hour. The designer or a representative of the building fabricator or supplier shall provide written certification that the building was constructed in conformance with all applicable plans, specifications, and code requirements.

8. Vegetation

(Insert detail which shall be in accordance with Construction Specifications 342, Critical Area Planting.)

9. Fencing

(Insert detail which shall be in accordance with Construction Specifications 382, Fencing.)

10. Operation and Maintenance

Develop an operation and maintenance plan that is consistent with the purposes of this practice, and the life of the composting facility. Recipe ingredients and sequence that they are layered and mixed shall be given in the plan.

Safety requirements for operation of the composting facility shall be provided.

Manage the compost piles for temperature, odors, moisture, and oxygen, as appropriate. Make adjustments throughout the composting period to insure proper composting processes.

Closely monitor temperatures above 165^{o} F. Take action immediately to cool piles that have reached temperatures above 185^{o} F.

The operation and maintenance plan shall state that composting is a biological process. It requires a combination of art and science for success. Hence, the operation may need to undergo some trial and error in the start-up of a new composting facility.